
Therapeutic potential of placenta-derived stem cells for liver diseases: Current status and perspectives.

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Public Summary:

This review paper overviews the stem cell characteristics of the amnion-derived stem cells and focuses on summarizing recent studies that have demonstrated therapeutic efficacy of these cells for liver diseases.

Scientific Abstract:

Over the last decade, there has been a growing interest in the human placenta as a unique source of stem cells. The placenta is a fetal organ that is normally discarded following delivery. Therefore, it is readily available as a source of cells without the ethical concerns normally associated with embryonic stem cells. These cells also carry less risk for age- and environmental-related DNA damage. In addition to these practical advantages of placenta-derived cells, amniotic epithelial cells possess unique stem cell-like biological characteristics. In contrast to other parts of the placenta, cells from the amniotic epithelium are derived from pluripotent epiblasts and possess the ability to differentiate into all three germ layers. From a translational perspective, amnion-derived stem cells are very attractive candidates for clinical application. These cells are genetically stable and do not demonstrate tumorigenicity upon transplantation, and may be endowed with immunomodulatory and/or anti-inflammatory properties. These unique characteristics have made amniotic epithelial cells attractive for use as stem cell-based therapies for liver disease. Human and rodent amniotic epithelial cells have already demonstrated their therapeutic efficacy in multiple animal models. Although the detailed mechanism by which the transplanted cells generate a therapeutic effect is not yet totally understood, these dramatic results have generated significant interest for consideration of these amnion-derived stem cells for clinical applications. This review covers recent findings of the therapeutic potential of amnion-derived stem cells for liver diseases, and provides perspectives for future developments.

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